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PAPERS

IN

COLONIES AND TRADE.

The GOLD MEDAL, *the Premium offered for curing British White Herrings, was this Session adjudged to Mr.* JOHN LEWIS, *of Broad Stairs, from whom the following Communications were received.*

SIR,

I BEG leave to inform the Society of Arts, &c. that I have this season cured six thousand five hundred and thirty-three barrels of white herrings, caught in the British seas, a great part of which have been cured after the manner of the Dutch, the others were for the West India, Baltic, Irish, and home markets.

The above is a much greater number of barrels than any other curer hath accomplished in the united kingdom. I have sent to the Society a half barrel as a specimen, and hope they will merit the Society's approbation. The Dutch commence their fishery in the deep sea in the middle of the summer; the fishery at Broad Stairs, where my herrings are cured, commences about the 10th of October. My herrings are thoroughly impregnated with salt, and for which purpose I prefer the patent English solid salt, which will preserve them good a long time, and even improve their flavor.

I am, very respectfully,
Sir,
Your obedient Servant,

JOHN LEWIS.

8, Lower Thames-street. Jan. 28th, 1813.

To C. TAYLOR, M.D. SEC.

CERTIFICATES.

THIS is to certify, that Mr. John Lewis has cured more than thirty barrels of gypp'd herrings, after the manner of the Dutch, and that the sample of half a barrel sent to the Society by the sloop Speculation is a fair sample of those cured by the said John Lewis.

JOHN KENNETT.
HENRY BANNER.
ROBERT BARFIELD.

Broad Stairs, Kent, Jan. 24th, 1813.

Mr. LEWIS's *Process for curing White Herrings.*

THE process used by me for curing white herrings after the manner of the Dutch, is as follows:—

As soon as possible after the herrings are caught, they are gypp'd, by cutting the blood veins of the neck across with a small knife made for that purpose, the small guts are to be drawn out of this incision by the knife, and at the same time the neck piece is to be cut out right under the two fore fins. The herrings must then be thrown into a tub, and well roused (mixed up with salt), and packed immediately whilst bleeding into casks, laying a sufficient quantity of salt between each layer of herrings. Foreign salt has usually been employed for this purpose, but from this year's experience, I find the *British solid salt equal, if not superior,* to any salt I have ever tried, and agreeably to the Dutch system, the herrings must be laid well on their backs in the cask; the casks must be then headed up and laid on their sides for a fortnight or three weeks, then opened and filled up, and so put by ready for shipping. This is the whole of the process.

I am, Gentlemen,
Your obedient, very humble Servant,
JOHN LEWIS.

Broad-Stairs, Jan: 22d, 1813.

To the Society of Arts, &c.

⁂ The Society, anxious to obtain every possible information upon the subject, procured the attendance of several very respectable Dutch merchants, and other persons from Holland, well conversant in the business of taking and curing herrings, to investigate the herrings sent from Mr. Lewis, and to favor the Committee with further observations upon the subject. They commenced the business by a careful examination of the cask sent to the Society, smelling and tasting the pickle, and observing the manner in which the herrings were placed in the barrel. They then took out some of the herrings promiscuously from the cask, and shewed from some ungypped herrings they brought with them, the manner of gypping the herrings, by making an incision nearly in the form of a half circle under the neck, removing the gills and guts, in a similar manner to those cured by Mr. Lewis.

To prepare Mr. Lewis's herrings for eating, they took them from the cask without washing, and cut off a small slip, the whole length of the belly, as useless, an incision was then made the whole length on the back of the fish, and the entire skin of the herring dextrously drawn off, commencing at the throat of the fish. The fish was then cut across obliquely in the direction of the vertebræ, in pieces of three fourths of an inch each, containing the bone in the centre of each, and thus laid on a plate for the table to eat with bread and butter. Some of them were prepared in another mode, by holding the fish, when skinned as before, by the finger and thumb of each hand; and by dextrously turning it over the wrists, the herring was split the whole length, and separated from the bone, leaving the whole fleshy part in two longitudinal pieces.

The Dutch gentlemen, after eating heartily of the herrings, concurred in the following sentiments:—

They declared Mr. Lewis's process of cure to be precisely the same as the Dutch method.

That the Dutch in their cure use generally the best Lisbon salt well crystallized, in the proportion of one thousand pounds weight of salt, to 14 whole barrels of herrings, each barrel containing from 1000 to 1200 herrings, according to their size.

That the Dutch commence their herring fishery on the 21st of June, and continue it from 58 to 60 degrees north latitude, to the latter end of August, following the herrings, and continuing their fishery of them southward, from that time to the latter end of October.

That the Dutch always pack their herrings in oak casks, and for the West India trade pack them in small casks, as a cask of herrings will not keep long there after being opened.

That the signs of a good herring are that the fat should run from the hands in opening it, the flesh appearing clear and white, and the flavor not too salt.

That the herrings caught in October, in latitude 40 degrees, are the best calculated for the West India markets, having then shot their roes and become maigre, and will therefore keep better.

That the Dutch herrings will keep good twelve months.

That Mr. Lewis's herrings are extremely good, and equal to the best Dutch, only rather too salt for home consumption. They recommend for the West India trade, that Mr. Lewis's herrings should be repacked in smaller barrels, in the following manner:—The herrings should be laid upon their backs very close to each other, the heads turned towards the outer circle of the cask, that when a layer is thus placed and pressed hard, some salt should be taken up between both hands open, and by a sudden jerk dispersed equally over the layer; the next layer of herrings should be laid directly cross ways of the former, pressed and sprinkled with salt as before, and the herrings thus closely placed, salted and packed, stratum super stratum, till the cask is well filled.

That the herrings are usually eat in Holland as taken from the cask, without boiling or other culinary preparation, but that the rows are usually broiled before the fire before they are eat.

Twenty Guineas *were this Session voted to Mr.* **Thomas Stiles,** *of Norwich, for curing British White Herrings, and the following Communications were received from him.*

SIR,

In the year 1809, I wrote to you my intention of communicating to the Society of Arts, &c. my process for the cure of herrings. I am not able to produce the thirty barrels, the quantity for which the premium is offered, so that my claim is not for quantity, but *quality*. The herrings which I produced to you in 1809, were deemed by Mess. Fortune & Everett, Fishmongers, in Thames-street, by Mr. Saunders, and also by gentlemen who have travelled on the continent, to be superior to the Dutch. I now submit to the Society a small cask of my curing for their inspection. I have sent my cask of fish unopened; they were cured in November 1811, and deposited in this gallon cask, April 1812. The Committee will discover on opening the cask, that notwithstanding the length of time they have been kept, that they are perfectly free from rancidity, and will continue so for years.

Within the last three months, I have opened some casks of herrings which have been cured three years, and found them perfectly free from rust. I think a similar process will preserve salted provisions of any kind from rancidity.

I am, Sir,

Your obedient Servant,

THOMAS STILES,
of Norwich.

My address whilst in London is at Mr. Banners, No: 25, Tichborn-street, Haymarket.

Dec, 16*th*, 1812.

To C. Taylor, M.D. Sec.

Certificates.

This is to certify, that Thomas Stiles, of the city of Norwich, was recommended to me in the month of Feb. 1810, as a superior curer of herrings, by Mess. Abbot & Lindsay, Merchants, at the New South-sea rooms, Threadneedle-street.

These gentlemen provided me a sample, which I so much approved, that on certain conditions I offered him £. 10,000 for the discovery, which he declined. In the March following I offered him £. 6000, and £. 300 a year to superintend the English and Scotch fisheries, which he also declined. I then understood he had connected himself with Mr. Patterson, M. P. of Norwich, and therefore dropped all further thoughts of an engagement with him, as witness my hand,

F. Fortune.

No. 16, *Albemarle-street, Jan*. 8*th*, 1813.

In a subsequent communication from Mr. Fortune, he states, that he still feels the same impression that Mr. Stile's method of cure exceeds any that he has had the opportunity of examining; that he heartily wishes him every success which his industry and invention merits, and shall, on all occasions, render him every service in his power.

SIR,

I RECEIVED a keg of your British cured herrings, on Dec. 19th, 1812, and two kegs on Jan. 7th, 1813, which gave great satisfaction to my friends, among whom I distributed them, and who generally made enquiry where they could be obtained, but knowing your stock was low, and that in a future year you intended to lower the price, I waved the question.

I remain, Sir,
Your obliged humble Servant,
WILLIAM WOOLMER.

Castle-street, Leicester-square, Jan. 1813.

To Mr. THOMAS STILES.

DEAR SIR,

THE general satisfaction your British cured herrings have given, induces me to suggest to you their being made known to the *shipping interest,* being fully confident their superiority will give them a decided preference. If you should think the idea worth attention, I shall feel happy in having promoted your welfare. Wishing you every success, I remain,

Your's truly,
BEN. WILLATS.

No. 19, *Fore-street, Jan.* 1*st,* 1813.

Further Certificates in favor of Mr. Stiles's herrings were received from Mr. DANIEL COPPIN, of Norwich, and Mr. G. ERRINGTON, fish-curer, of Yarmouth.

Mr. THOMAS STILES's *Process for curing Herrings.*

Take 4500 herrings (which will fill 3 barrels of 32 gallons each) procured from the fishermen the day they are caught, and before the setting of the sun if possible. With spring sheep-sheers cut off their heads, and disembowel them by cutting the belly longitudinally about 1-8th of an inch beyond the belly fins, and put the heads, bowels and roes into a copper, with six gallons of water and six pounds of salt, from the quantity allowed by government (which is 140lb. of salt per barrel), boil this mixture slowly for four hours till it becomes a pulp, then strain it through a clean hair sieve, and when you have drained the liquor, cast the dregs into a press, within a horsehair bag, and compress the dregs forcibly to discharge all the contained liquid, when this liquid has stood till perfectly cold, an oil will arise on the surface which must be carefully removed, then press the liquor through a clean hair sieve, and preserve it safe.

After taking off the heads and disembowelling the herrings, as above mentioned, take the bodies and put them into sea water, in a large tub provided for the purpose, 500 herrings at a time, and stir them well about therein with a broom to cleanse them from all filth, then cast them into wicker baskets to drain for about 15 minutes, then take for the three barrels 1½lb. of black pepper ground, 1½lb. of ginger, ¾lb. sassafras powdered, and six pounds of coarsegrained raw sugar, and the remainder of the salt allowed by government; mix these ingredients well together, and put this mixture and your 4500 herrings into a reservoir, and stir them well together with a stirring staff similar to what the brewers use when mashing, let them remain thus for three days, then take three thirty-two gallon oak barrels, and place 1500 fish in each barrel, coopering them up as soon as the fish have shrunk so as to be compressed therein, when coopered place the barrels on their sides, gun fashion, and pour first into each barrel one gallon of vinegar, No. 24, and then add a proportion of the liquor prepared as before mentioned, from the heads and bowels, also that from the salt and spices, all well mixed together, and let the casks be well filled up therewith, and bunged, placing them so as to be rolled about, in order that every part of the barrel be well filled, as the surest means to prevent rancidity. When you have carefully ascertained after rolling for several successive days that your casks are perfectly full, bung them down securely, and let them stand some months, when they will be fit for market.

Observations.

If it so happens, that a larger quantity of fish is caught than your people can discharge of heads and bowels before the sun sets, put those fish which you cannot operate upon, (after first washing them in sea water or salt water) into a reservoir with the quantity of salt allowed by government, stirring the salt and herrings together, then take the first opportunity to take away the heads and bowels, and wash your fish in some of the salt liquor, then boil the heads and bowels as before, and strain this liquor through a clean hair sieve, place all your articles, as pepper, ginger, sassafras and sugar, in the reservoir with your washed herrings for three days, then proceed to barrel them, adding first one gallon of vinegar, then fill up the cask with your boiled liquor, and the pickle prepared from the spices; proceeding as above mentioned.

N.B. Sprats may be cured by the above process, with the addition of 2lb. of saltpetre pulverized for each cask of 32 gallons, it is immaterial whether they are cured with or without the heads and bowels.

⁂ Mr. Stiles's process for curing herrings will be found rather more expensive than the Dutch method of cure, but the herrings cured by Mr. Stiles have a peculiar mellowness and fine flavor, much resembling the anchovy, and may be employed in many cases as a valuable substitute for anchovies.

The SILVER MEDAL *of the Society was this Session voted to Mr.* PHILLIPS LONDON, *of Cannon-street, for Curing or Pickling Mackarel. The following Communication on the subject was received from him.*

SIR,

I TAKE the liberty of sending to you, for the inspection of the Society of Arts, &c. what I think a fine specimen of pickled mackarel in their entire state.

They were cured with my British solid salt. I am told the cure of mackarel whole has hitherto been deemed almost impracticable.

I believe split mackarel have been salted and preserved, but in a very inferior state to these. If my mackarel should be thought deserving of future notice, I shall with great pleasure communicate with the Society upon the subject.

I am, Sir,
Your obedient Servant,
PHILLIPS LONDON.

No. 57, *Cannon-street, April* 20*th*, 1813.

To C. Taylor, M. D. Sec.

Certificates.

British Herring Fishing Company's Office, London. At a meeting of the Directors, held at the Company's office, March 23d, 1813, present Kinnaird Smith, Esq. in the Chair;

William Smith, Esq. M. P.
Nathaniel Brickwood, Esq.
John Capel, Esq.
J. C. Saunders, Esq.
Thomas Cresswell, Esq.

Resolved, that the Secretary be directed to deliver to Mr. Phillips London, patentee of the British solid salt, a certificate as under:

Mr. London having this day produced to the Directors of the British Herring Fishing Company, some mackarel, cured with his patent solid salt, they do, in justice to Mr.

London, voluntarily certify, and declare it to be their opinion, that the mackarel so cured far surpassed in goodness any the directors had before seen, both in point of colour and taste,

The natural outside appearance of the mackarel was preserved nearly as bright as when they are fresh, although they had been in pickle since the last mackarel season, and when cut, were in high perfection, being of a reddish colour, very moist, and excellent in flavor.

A very small portion likewise of the salt, in which it had been in pickle, was dissolved, so that the whole which was left, appeared fit for other uses.

The directors feel pleasure in testifying these facts, which if generally known, they hope may tend to the benefit of the community at large.

Signed by order of the Board,

THOMAS SAUNDERS, Secretary.

To MR. PHILLIPS LONDON.

SIR,

As some fishermen have been lately with me from Margate, on the business of a ship to which they lent assistance, whilst on the Margate sand, I conversed with them on the subject of the approaching mackarel fishery. They were astonished when I told them that you had completely cured that fish with the *solid salt*, and their surprize was increased when I gave them a specimen of those which you caused to be cured in October last. They admired greatly the condition of the fish, and said, to use their own words, " that they had tried to cure them many a time and often, but never could succeed." They have taken the fish to Margate with great satisfaction, and think that the consequences will be very important, as the take of mackarel on the British coast may be carried to an immense extent, and open a large foreign trade, as well as afford a wonderful supply for home consumption.

I have also shewed the cured mackarel to one of the first Jamaica merchants, who adjudged it to be a new discovery, and said that the fish were perfectly cured, and fit for the West India consumption.

The flavor of these cured mackarel appears to be as extraordinary as their preservation, being thought by some persons for use as sandwiches, and the purposes of the table, equal, if not superior to the anchovy.

I am, dear Sir,

Yours, very respectfully,

R. T. Marten.

America Square, May 4th, 1813.

To Mr. P. London.

Mr. P. London's *Process for curing Mackarel.*

The salt which he uses for his pickle, is British salt refined by fusion, in which operation the impurities are separated by precipitation.

The strength of the brine in which his fish is pickled is in specific gravity in proportion to water, as 1205, to 1000.

He recommends the following plan for the cure.

The fishing boats to take out with them, vessels containing brine of the strength above mentioned, and the moment the mackarel are caught they are to be put alive into this brine, without gutting or any other preparation.

That on barrelling them, a surplus of dry salt be added in the cask, to strengthen the brine, which is become weaker from a portion of the salt of the brine being absorbed by the fish and the natural moisture of it.

That this is all the necessary operation, that the expense of the salt is very little, as government allows a drawback of the duty on all salt used in the fisheries.

Mr. London believes that mackarel pickled in common salt would soon putrify. He supposes they may be preserved with large grained Cheshire salt, but even this is not equal to the refined salt he uses, which, from his experiments, contains 570 parts of marine acid, 425 parts of soda, and only 5 parts of extraneous matter, in 1000 parts of the salt.

⁂ It appeared to the Committee, that a greater portion of salt in lumps was added to the pickle, than could be dissolved, and that there always should remain a quantity of lumps of salt undissolved, ready to counteract by solution any tendency to putridity which may arise in the fish. That Mr. London's British salt is particularly well calculated for the preservation of fish, from being deprived of its impurities and water of crystallization by previous fusion.

The SILVER MEDAL *of the Society was this Session voted to Mr.* DURAND, *of Niagara, Upper Canada, for a Machine for braking, hackling, and scutching Hemp. The following Communication was received from him, an explanatory Engraving is annexed, and a Model of the Machine is preserved in the Society's Repository.*

MR. DURAND presents his compliments to Dr. Taylor, and has annexed a description of his hemp and flax machinery, which he hopes will be found intelligible.

Mr. Durand leaves town to-morrow, on his way to New York, and if Dr. Taylor should have any communication to make, he is desired to address it to Mr. Durand, Niagara, Upper Canada.

No, 11, *Old North-street, Red-lion-square,*
March 21*st*, 1810.

Mr. DURAND's *Directions for his Hemp and Flax Machinery.*

THE horizontal wheel, 12 feet diameter, the shaft 10 feet long. Upon the top of the rim of the said wheel, should be 24 cogs or pins about 1½ inch thick, at equal distances round the circle, which act upon the levers that raise the brakes. From these levers are extended small bars fastened to a roller near the center of the brakes, which brakes should be made of plank, 1 foot wide, and 2 inches thick. The planks which form the under part of the brakes, are three feet long, and are fastened to a piece of timber at the bottom 8 feet long, 18 inches wide, and 8 inches thick.

The jaws of the brakes rise 45 degrees, so as to form a right angle. From each of these planks are framed (across) the blades or beaters which intersect each other, and brake the flax or hemp. The lower end of the upper part of the brake plays on a pin running through the timber, and on this timber is fastened a spring with the upper end bearing upon a roller which passes through the side plank of the upper jaw, in order to force the brake down. This spring is so fixed as to be strengthened or weakened at pleasure by a key. There should be two brakes, one on each side of the wheel, which if the machinery is worked by a horse wheel, should be placed two feet above the level of the horses' feet.

The scutching part is a wheel, two feet long, and 3½ feet diameter, in the rim of which is placed 6 blades, which serve as wooden knives against a moving rack to clean the hemp or flax. This wheel should be vertical, and the knives horizontal. Upon the axis of this wheel at the end is a groove or pully, 8 inches diameter, and a band running about it, also around a band wheel under the large wheel, formed by hooked pins, extending downwards from the arms of the large wheel.

Reference to the Engraving of Mr. DURAND'S *Machine for Braking and Scutching Hemp or Flax. Plate* 17, *figs.* 1, 2.

The operation of dressing hemp or flax, to separate them from the woody stalk of the plant into distinct fibres, which will admit of being spun into ropes or thread, is generally performed by means of the brake and scutcher, which are worked by hand.—The hand brake is a machine which was for many ages chiefly employed in braking and separating the *boon* from the flax, which is the cuticle or bark of the plant; it is a plank supported on legs like a stool, and another placed upon it, being united to the former at one end by a center pin, and the other having two teeth called swords, fixed upon it across its breadth, which interlock in the space between three similar teeth fixed across the lower plank;—In using this machine the flax being held in the left hand across the three under teeth or swords of the brake, the upper teeth or swords are then with the right hand quickly and often forced down upon the flax, which is artfully shifted and turned with the left hand, in order that it may be fully and completely broken in its whole length;—The flax stock and scutcher are implements for braking, cleaning and scutching flax, in the old method of dressing it. The stock is a plank fixed like a bench before the workman, and the scutcher is a kind of short wooden sword, with which he strikes the flax, while it is hanging over the edge of the stock. In this business the workman, with his left hand, holds the flax over the stock, while with his right hand he strikes the flax with the scutcher, with a sloping stroke.

This method of braking and scutching flax by hand being extremely tedious and laborious, the mill was invented in Scotland many years ago, but has been lately much improved, and by being driven by water makes great dispatch, and in skilfull and careful hands generally gives satisfaction. It has been generally constructed so as to break the boon by three indented rollers, placed one above the other, the middle one of which being forced quickly round, takes the other two along with it, and one end of the handfulls of the flax being by the workmen directed in between the upper and middle rollers, a curved board or plate of tin behind the rollers directs the flax to turn in again between the middle and undermost rollers; and thus the operation is repeated until the boon be sufficiently broken; great weights of timber and stone placed at the ends of levers are also employed to press the upper and under rollers towards the middle one.

The business of scutching is carried on by the mill, in the following manner, four arms something like the hand scutchers, before described, project from a perpendicular axle; a box placed around the axle incloses these projecting scutchers. and this box is divided among the workmen, each having sufficient room to stand and handle his flax; slits are made in the upper part and sides of the box, and through them they hold the flax against the stroke of the scutchers, which moving round horizontally strike the flax across, at right angles, and so thrash out, or clear it of the boon.

The braking of the flax by rollers is scarcely subject to any objection, except that it is dangerous to workmen not sufficiently on their guard, who sometimes allow the rollers to take hold of their fingers, and thereby endanger their whole arm, being instantly drawn in; in this way many have lost their arms, to avoid this danger a brake, upon the general principles of the hand brake before described, has been lately adapted to water machinery, and used in place of rollers with great advantage.

The horizontal stroke of the scutcher was long thought too severe, and wasteful of the flax; but very careful experiments have discovered, that the waste complained of must be charged to the unskilfulness or negligence of the workmen; as, in good hands the mill carries away nothing but what, if not so scutched off, must be taken off in the hackling with more loss, both of time and flax; but to obviate the objection of the violence of the horizontal scutchers, an imitation of hand scutching has been applied to water. The scutchers there project from an horizontal axle, and move like the arms of a check-reel, striking the flax neither across nor perpendicularly down, but sloping in upon the parcel exactly as the flax is struck by the hand scutcher, this sloping stroke is obtained by raising the scutching stock some inches higher than the center of the axle, and by raising or lowering the stock over which the flax is held, or by screwing it nearer to, or farther from the scutcher, the workmen can temper or humour the stroke almost as he pleases.

Upon the latter principle, Mr. Durand's machine is constructed in combination with brakes, like the hand brake, but worked by machinery; the whole is made in an œconomical manner chiefly of wood, so as to be fit for the country use in Canada, where the culture of hemp is attended with very great advantage.

Fig. 1, Plate 17, is a perspective view of the whole machine: and fig. 2 is an elevation of one of the brakes, separately, and on a larger scale.

The machine may be worked either by the power of horses, or by a water-wheel; in the former case, the levers by which the horses draw, may be fixed to the vertical shaft A, and they will walk round beneath the wheel B; but in situations where a fall of water can be obtained, its power is applied in the manner represented in the Plate 17. The water-wheel is supposed to be placed behind the wall C C, and its axis comes through an aperture in it having the crown-wheel D fixed upon it, the teeth of this act upon a trundle, fixed upon the vertical axis A, and thus gives it motion; the wheel B has pins or cogs fixed upon it, which act upon the short levers, *a, b,* and these by means of rods *d d,* communicate motion to the two brakes F and G; these are upon the same construction as the hand brakes before mentioned, though rather differing in their position; a thick plank of wood *c* is fixed down upon the floor, and at one end the two pieces *l l,* are erected in an inclined position, and support the two fixed swords or teeth *e,* as shewn in fig. 2; *f* are the moving teeth fixed to two pieces *g h,* which are attached to the plank by a center pin through the end *h*; a pin is extended across between these two, and passes through the end of the rod *d d,* and another similar pin is extended between them, rather nearer the center; upon this the spring *i* operates to throw down the upper teeth of the brake upon the lower: when the ends of the levers at *a* and *b* escape from the cogs of the wheel B in its revolution, the flax being held between the teeth, is by repeated blows broken in the manner before described; the succeeding cog of the wheel B, raising up the brake again as soon as it has fallen, by one cog passing by; as the two sides of the wheel B move in opposite direction, the levers *a* and *b* are differently constructed, the cutter operating on opposite sides of the center of motion; thus the cog of the wheel acts upon one end, and the rod *d* is jointed to the other. The lever *a* has the rod *d* connected to it very near the same point, as that where the cogs of the wheel meet it. The scutchers are marked H and L, they are framed of four arms, projecting from an horizontal axis, mounted on pivots which are supported by vertical standards, as plainly shewn: the ends of these arms carry pieces of wood which are properly shaped for scutching the flax over the edge of a stock, fixed near them for that purpose, and adjustable as before described; the two scutchers H and I, revolve in opposite directions to each other, and their stocks are therefore placed on opposite sides; that which supports the flax which is to be operated upon by the scutcher, I, being placed before it, in front; but the stock for the other H is behind; by this means the two workmen do not interfere with each other; these opposite motions of the scutchers are given by two endless bands from a drum or cylinder K, situated over them, one of these bands is crossed and the other not, therefore they communicate opposite motions to the two scutchers, the cylinder is put in motion by means of an endless band *h*, running in a deep groove in it, which crosses, and is then carried round a circle of cleats or riggers, with angular notches in them, to receive the band fixed to the wheel B beneath it; thus by the same motion of the mill the two stocks and two scutchers are both actuated, and by the simplest machinery.

Mr. Durand's Machine for Braking and Scutching Hemp or Flax.

Fig. 1.

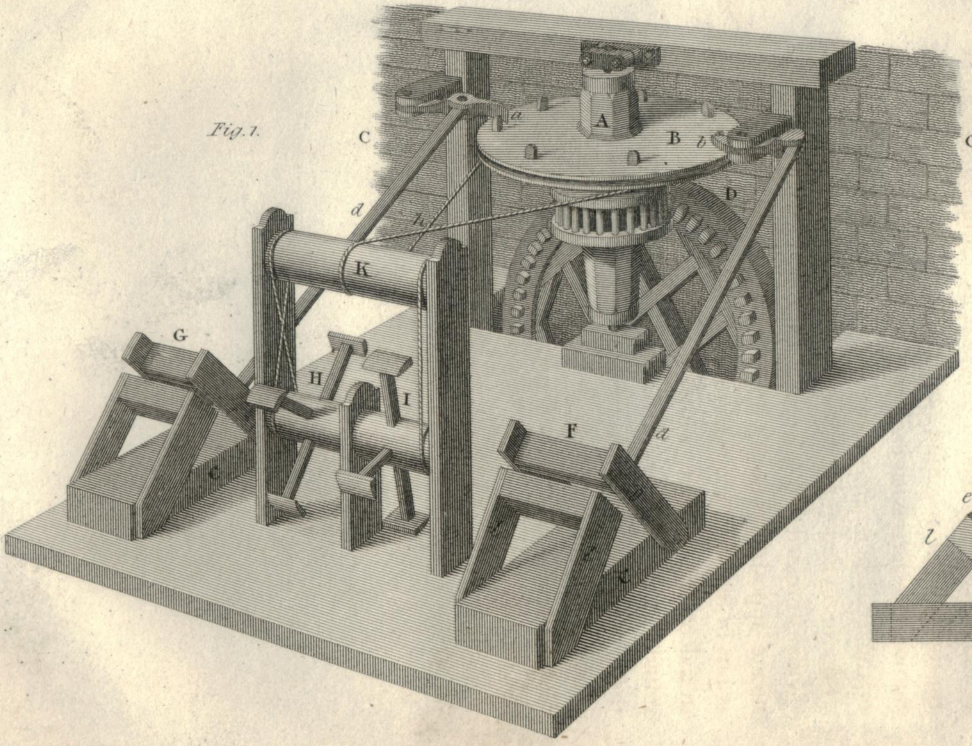
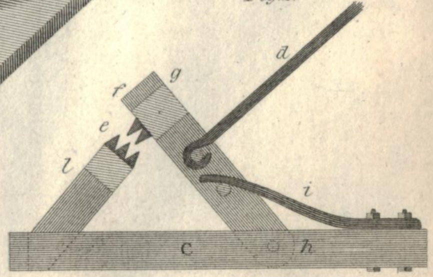


Fig. 2.



Drawn by J. Farey.

Engraved by J. Davis.